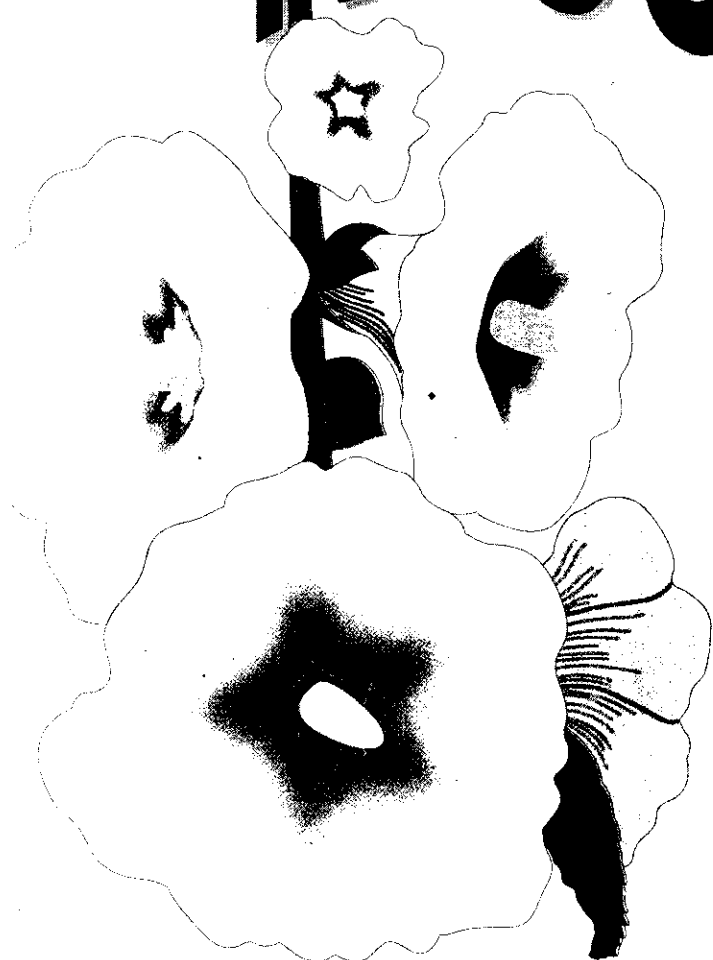# RESULTS

RESULTS

The present work was carried out on 250 females selected from the Out Patient clinics of the Gynaecology and Obstetric Departments of Benha University Hospital.

All selected cases were subjected to full research sheet, and gynecological examination. Endocervical scraping were collected from each studied case. All specimens were inoculated on BGM cell line for culture of HSV, and smears were done and stained with Papanicolaou stain and direct immuno-fluorescent stain using labelled monoclonal antibodies against HSV.

Our results presented in 19 tables and 6 figures.

Table (1): Detection rate of HSV from cervical scrapings among the 250 examined cases.

Total	BGM		DFA		Papanicolaou stain	
	No.	**%**	**No.**	**%**	**No.**	**%**
250	36	14.4	29	11.6	16	6.4

Table (1) shows that, out of the 250 examined cases, 36 (14.4%) were positive for HSV by culture on BGM cells, 29 (11.6%) by DFA staining, and 16 (6.4%) by Papanicolaou stain.

Table (2) : Distribution of studied cases according to clinical condition of the cervix.

Total	Normal cervix		Cervical erosion		Chronic cervicitis		Cervical cancer	
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
250	103	41.2	92	36.8	47	18.8	8	3.2

Table (2) shows that, out of the 250 studied cases, 103 (41.2%) had an apparently normal cervix. Cervical erosion were present in 92 (36.8%), while chronic cervicitis were present in 47 (18.8%), and cervical cancer was present in 8 cases (3.2%).

Table (3): Detection rate of HSV from cervical specimens among studied women according to various laboratory tests.

Clinical diagnosis	No. of cases	+ve cases on BGM cell		+ve cases by DFA stain		+ve cases by Papanicolaou stain	
Normal cervix	103	5	4.8%	4	3.8%	3	2.9%
Cervical erosion	92	19	20.7%	15	16.3%	9	9.8%
Chronic cervicitis	47	11	23.4%	10	21.3%	4	8.5%
Cervical cancer	8	1	12.5%	0	0	0	0
Total	250	36	14.4%	29	11.6%	16	6.4%

* Cervical erosion / normal cervix :

BGM Z = 3.12   DFA   Z = 2.61   Papanicolaou stain Z = 1.71

* Chronic cervicitis / normal cervix :

BGM Z = 3.11   DFA Z = 2.29 Papanicolaou stain Z = 1.37.

*Cervical cancer / normal cervix :

BGM Z = 0.58

Table(3) shows: From the 103 women with an apparently normal cervix, 5 isolates (4.8%) were obtained on BGM cells, while by DFA 4 cases (3.8%) were positive. Only 3 cases (2.9%) were positive by Papanicolaou stain.

From the 92 cases diagnosed as cervical erosion 19 HSV isolated (20.7) could be obtained on BGM cell tissue culture, 15 cases (16.3%) were positive by DFA, and 9 cases (9.8%) were positive by Papanicolaou stain.

Out of the 47 cases with chronic cervicitis, 11 isolates (23.4%) could be obtained on BGM cell tissue culture, 10 cases (21.3%) were positive by DFA and 4 cases (8.5%) were positive by Papanicolaou stain.

Out of the 8 cases with cervical cancer, one isolate (12.5%) was detected on BGM, while no cases were detected by DFA or Papanicolaou stain.

Table (4): Distribution of the studied cases according to age:

Age	No.	%
>20-30 years	40	16.0%
30-40 years	181	72.4%
40-45 years	29	11.6%

Table (4) shows : The cases were divided into three age groups cases aged from 20-30 years were 40 (16.0%), aged from 30-40 years were 181 (72.4%), while those aged from 40-45 years were 29 (11.6%).

Table (5) : Detection rate of HSV from cervical scrapings among the studied women according to their age.

Age	No.	+ve by culture on BGM		+ve by DFA		+ ve by Papanicolaou stain	
		No.	%	No.	%	No.	%
> 20-30 years	40	13	32.5%	10	25.0%	3	7.5%
30 - 40 years	181	22	12.2%	19	10.5%	13	7.2%
40 -45 years	29	1	3.4%	0	0	0	0
Total	250	36	14.4	29	11.6	16	6.4

* **Women 20-30 years/ 30-40 years:**

  BGM: $Z = 1.82$ DFA: $Z = 1.31$ Papanicolaou stain: $Z = 0.34$.

* **Women 30-40 years/ women 40-45 years:**

  BGM : $Z = 4.57$

* **Women 20-30 years/ women 40-45 years:**

  BGM: $Z = 2.36$

Table (5) shows that : Out of the 40 cases aged from 20-30 years, 13 isolates (32.5%) were obtained by culture on BGM lines, 10 (25%) were positive by FDA, while 3 (7.5%) were positive by Papanicolaou stain,while from the 181 women aged from 30-40 years 22 HSV isolates could be obtained on BGM (12.2%), 19 cases (10.5%) were positive by DFA and 13 cases (7.2%) were positive by Papanicolaou stain, from women aged above 40 years only one (3.4%) were positive by culture method only, while it was negative by DFA and Papanicolaou stain.

Table (6): Distribution of the studied cases according to history of suspected herpetic like lesions.

Total	No History		On mouth		On genitalia		On eye	
	No.	%	No.	%	No.	%	No.	%
250	171	68.4	67	26.8	9	3.6	3	1.2

Table (6) shows that: Out of the 250 studied cases, 171 (68.4%) gave no history of suspected herpetic lesions, 67 (26.5%) gave previous history of suspected herpetic like lesions on the month, (3.6%) were gave previous history of suspected herpetic like lesions on the genitalia, while only 3 (1.2%) were gave previous history of suspected herpetic like lesions on the eye.

Table (7): Distribution of positive cases according to their history of suspected herpetic like lesions.

History	No.	+ve cases on BGM		+ ve cases by DFA		+ve cases by Papanicolaou stain	
		No.	%	No.	%	No.	%
No history of herpetic like lesions	171	21	12.3%	19	11.1%	11	6.4%
Herpetic like lesion on mouth	67	10	14.9%	6	8.9%	4	5.9%
Herpetic like lesions on genitalia	9	5	55.6%	4	44.4%	1	11.1%
Herpetic like Lesions on eyes	3	0	0	0	0	0	0
Total	250	36%	14.4	29	11.6%	16	6.4%

* **Herpetic like lesion on mouth/no history of herpetic like lesion:**

BGM : Z = 0.94   DFA: Z = 0.81   Papanicolaou stain: Z = 0.37

* **Herpetic like lesion on genitalia/ no history of herpetic like lesions:**

BGM :Z = 2.41   DFA: Z = 2.84   Papanicolaou stain: Z = 0.81

Table (7) shows that: Out of 171 women who had no history of suspected herpetic lesions, 21 HSV isolates (12.3%) could be obtained on BGM cells, 19 (11.1%) were positive by DFA, while 11 (6.4%) were positive by Papanicolaou stain.

Out of 67 women who had history of suspected herpetic like lesions on the mouth, 10 isolates (14.9%) could be isolated on BGM cells, 6 cases (8.9%) were positive by DFA, while 4 cases (5.9%) were positive by Papanicolaou stain.

Out of 9 women who had history of suspected herpetic like lesions on the genitalia, 5 isolates (55.6%) could be isolated on BGM, 4 (44.4%) were positive by DFA, and 1 (11.1%) were positive by Papanicolaou stain.

Out of the 3 cases that had herpetic like lesions on the eyes, they were negative by the three different laboratory tests used.

Table (8): Distribution of the studied cases according to gravidity.

Total	Nulli-gravida		Primi-gravida		Multi-gravida	
	No.	**%**	**No.**	**%**	**No.**	**%**
250	39	15.6%	17	6.8%	194	77.6%

Table (8) shows that : Out of the (250) studied cases were distributed according to gravidity to 39 (15.6%) nulli-gavida, 17 (6.8%) were primigravide, 194 (77.6%) were multi-gravida.

Table (9): Detection rate of HSV from cervical scrapings among nulli-gravida, primi-gravida and multi-gravida women among different laboratory tests.

Gravidity	No.	+ ve cases on BGM		+ve cases by DFA		+ve cases by Papanicolaou stain	
Nulli-gravida	39	4	10.3%	2	5.1%	1	2.6%
Primi-gravida	17	2	11.8%	1	5.9%	1	5.9%
Multi-gravida	194	30	15.5%	26	13.4%	14	7.2%
Total	250	36	14.4%	29	11.6%	16	6.4%

* **Nulli-gravida/prim-gravida:**

BGM : Z = 0.34   DFA: Z = 0.63   Papanicolaou stain : Z = 0.51

* **Nulli-gravida/multi-gravida:**

BGM : Z = 1.91   DFA : Z = 2.34   Papanicolaou stain : Z = 2.34

* **Prim-gravida/multi-gravida:**

BGM : Z = 1.31   DFA : Z = 3.44   Papanicolaou stain : Z = 2.85

Table (9) shows that : Out of the 39 nulli-gravida women, 4 isolates (10.3%) could be obtained on BGM cells, 2 cases (5.1%) were positive by DFA, and one case (2.6%) were positive by Papanicolaou stain.

Out of the 17 primi-gravida women, 2 isolates (11.8%) could be obtained on BGM, while only one case (5.9%) were positive by both DFA, and Papanicolaou stain.

Out of the 194 multi-gravida women. 30 isolates (14.4%) could be obtained on BGM, 26 cases (13.4%) were positive by DFA, while 14 cases (7.2%) were positive by Papanicolaou stain.

Table (10): Distribution of the studied cases according to parity.

Total	Nulli-para		Primi-para		Multi-para	
	No.	%	No.	%	No.	%
250	21	8.4%	189	75.6%	40	16%

Table (10) shows that : The studied cases were distributed according to parity into 21 (8.4%) nulli-para, 189 (75.6%) primi-para, and 40 (16%) multi-para.

Table (11): Detection rate of HSV according to the parity state regarding to various laboratory tests.

Parity State	No.	+ ve on BGM		+ve by DFA		+ve by Papanicolaou	
Nulli-para	21	2	9.5%	3	14.3%	2	9.5%
Primi-para	189	27	14.3%	22	11.6%	12	6.3%
Multi-para	40	7	17.5%	4	10.0%	2	5.0%
Total	250	36	14.4%	29	11.6%	16	6.4%

* **Nulli-para/primi-para:**

   BGM: Z = 0.34   DFA : Z = 0.31   Papanicolaou stain: Z = 1.01

* **Nulli-para/multi-para:**

   BGM : Z = 1.61   DFA : Z = 3.21   Papanicolaou stain: Z = 3.11

* **Primi-para/multi-para:**

   BGM : Z = 0.87   DFA: Z = 3.41   Papanicolaou stain: Z = 3.94

Table (11) shows that : Out of the 21 nulli-para women, 2 (9.5%) isolates could be obtained on BGM cells, 3 (14.3%) cases were positive by DFA, and 2 (9.5%) cases were positive by Papanicolaou stain. Out of the 189 primi-para women, 27 (14.3%) isolates were positive by culture, 22 (11.6%) cases were positive by DFA, and 12 (6.3%) cases were positive by Papanicolaou stain. Out of the 40 multi-para women , 7(17.5%) isolates were positive by culture, 4(10%) cases were positive by DFA, and 2(5.0%) were positive by Papanicolaou stain.

Table (12): Distribution of the studied cases according to history of abortion.

Total	No. abortion		Abortion once		More than one abortion	
	No.	%	No.	%	No.	%
250	130	52.0%	79	31.6%	41	16.4%

Table (12) shows that : Out of the 250 studied cases, 130 (52.0%) were had no history of abortion, 79 (31.6%) were had a history of one abortion, while 41 (16.4%) were had history of abortion more than one.

Table (13): Distribution of positive cases according to history of abortion.

History of abortion	No.	+ ve on BGM		+ve by DFA		+ve by Papanicolaou stain	
No abortion	130	21	16.2	17	13.1	7	5.4
Abortion once	79	8	10.1	7	8.9	5	6.3
More than one	41	7	17.1	5	12.2	4	9.8
Total	250	36	14.4%	29	11.6%	16	6.4%

* **Abortion once/no abortion:**

   BGM : $Z = 0.44$ DFA: $Z = 1.86$ Papanicolaou stain: $Z = 0.89$

* **More than one abortion/no abortion:**

   BGM : $Z = 1.42$ DFA: $Z = 0.12$ Papanicolaou stain: $Z = 0.52$

Table (13) shows that: Out of 130 cases who had no history of abortion, 21 (16.2%) cases were positive by BGM, 17 (13.1%) cases were positive by DFA, and 7 (5.4%) cases were positive by Papanicolaou stain.

Out of 79 cases who had history of one abortion, 8 (10.1%) cases were positive by BGM, 7 (8.9%) cases were positive by DFA, and 5 (6.3%) cases were positive by Papanicolaou stain.

Out of 41 cases who had history of more than one abortion, 7 (17.1%) cases were positive by BGM, 5 (12.2%) cases were positive by DFA, and 4 (9.8%) cases were positive by Papanicolaou stain.

Table (14): Distribution of studied cases in relation to the method of contraception.

Total	Non users		Oral contraceptive Pills		IUD		Tubal Ligation		Condom	
	No.	%	No.	%	No.	%	No.	%	No.	%
250	187	74.8%	40	16.0%	12	4.8%	8	3.2%	3	1.2%

Table (14) shows that :   Out of the 250 cases ,187 (74.8%) were non-users of contraception, 40 (16.0%) were using oral contraceptive pills, 12 (4.8%) were using IUD, 8 (3.2%) were tubal ligated, while only 3 cases (1.2%) were their husband using mechanical barriers (condoms).

Table (15): Distribution of positive cases according to the method of contraception.

Method of contraception	No. of cases	+ve cases on BGM cell		+ve cases by DFA		+ve cases by Papanicolaou stain	
		No.	%	No.	%	No.	%
Non-users	187	23	12.3%	22	11.8%	10	5.3%
Oral Pills	40	6	15.0%	4	10.0%	3	7.5%
IUD	12	4	33.3%	3	25.0%	3	25.0%
Tubal ligation	8	3	37.5%	0	0	0	0
Condom	3	0	0	0	0	0	0
Total	250	36	14.4%	29	11.6%	16	6.4%

* Pills/non users:

   BGM : Z = 0.82   DFA: Z = 0.41   Papanicolaou stain : Z = 0.12

* IUD/ non users:

   BGM : Z = 1.39   DFA: Z = 1.14   Papanicolaou stain : Z = 1.02

* Tubal ligation/non users:

   BGM : Z = 0.72

    Table(15) shows that :   Out of 187 cases were non users of contraception, 23 (12.3%) cases were positive by BGM, 22 (11.8%) cases were positive by DFA, and 10 (5.3%) cases were positive by Papanicolaou stain.   Out of 40 cases who were using contraceptive pills, 6 (15%) cases were positive by BGM, 4 (10%) cases were positive by DFA, and 3 (7.5%) cases were positive by Papanicolaou stain. Out of 12 cases that were using IUD (33.3%) cases were positive BGM culture method, 3 (25%) cases were positive by DFA, 3 (25%) cases were positive by Papanicolaou stain. Out of 8 cases who were tubal ligated, 3 (37.5%) cases were positive by BGM tissue culture while, no positive cases could be identified by DFA, or Papanicolaou stain. Out of the 3 cases who their husbands were using condoms, no positive results would be detected by the three different laboratory methods used.

Table (16): Distribution of studied cases according to pregnancy.

Total	No. pregnancy		Pregnant in the 1st trimester		Pregnant in the 2nd trimester		Pregnant in the 3rd trimester	
	No.	%	No.	%	No.	%	No.	%
250	222	88.8%	14	5.6%	8	3.2%	6	2.4%

Table (16) shows that : Out of the 250 studied cases, 222 (88.8%) were non-pregnant 14 (5.6%) were in the 1st trimester of pregnancy , 8 (3.2%) were in the 2nd trimester of pregnancy, while 6 (2.4%) were in the 3rd trimester of pregnancy.

Table (17): The detection of HSV from cervical scraping among pregnant and non-pregnant women.

Pregnant/Non pregnant	+ve cases on BGM		+ve cases by DFA		+ve cases by Papanicolaou stain	
Pregnant :						
1st trimester (14)	3	21.4%	2	14.3%	1	7.1%
2nd trimester (8)	1	12.5%	1	12.5%	1	12.5%
3rd trimester (6)	1	16.7%	1	16.7%	1	16.7%
Total pregnant (28)	5	17.9%	4	14.3%	3	10.7%
Non pregnant (222)	31	13.9%	25	11.3%	13	5.9%
Total (250	36	14.4%	29	11.6%	16	6.4%

* Total pregnant women/non pregnant:

   BGM: Z = 0.41   DFA:Z = 0.74   Papanicolaou stain : Z = 0.29

* Pregnant 1st trimester/non pregnant:

   BGM: Z = 0.12   DFA : Z = 0.24   Papanicolaou stain: Z = 0.59

* Pregnant 2rd and trimester/non pregnant

   BGM : Z = 0.38   DFA:Z = 0.89   Papanicolaou stain:Z = 0.46

* Pregnant 3rd trimester/non pregnant:

   BGM : Z = 0.40   DFA:Z = 0.19   Papanicolaou stain :Z = 0.08

Table (17) shows that: Out of 222 non pregnant women, 31 (13.9%) cases were positive by BGM culture, 25 (11.3%) cases were positive by DFA, and 13 (5.9%) cases were positive by Papanicolaou stain. Out of 28 pregnant women, 5 (17.9%) cases were positive by BGM tissue culture, 4 (14.3%) cases were positive by DFA, 3 (16.7%) cases were positive by Papanicolaou stain. Out of 14 pregnant women in the 1st trimester, 3 (21.4%) cases were positive by BGM tissue culture, 2 (14.3%) cases were positive by DFA, 1 (7.1%) cases were positive by Papanicolaou stain. Out of 8 pregnant women in the 2nd trimester, case was positive by BGM tissue culture, DFA and Papanicolaou stain. Out of 6 pregnant women in the 3rd trimester, one case was positive by BGM, DFA and by Papanicolaou stain.

Table (18): Comparison between the results of BGM tissue culture and stain.

Test		BGM		Total
		+ve	-ve	
Papanicolaou stain	+ve	12	4	16
	-ve	24	210	234
Total		36	214	**250**

* Sensitivity : 33.3%   * Specificity   : 98. %

+ ve PV   : 75%   - ve PV   : 89.7%

Table (19): Comparison between the results of BGM culture and DFA stain.

Test		BGM		Total
		+	-	
DFA	+	21	8	29
	-	15	206	221
Total		36	214	**250**

* Sensitivity   : 58.3%   * Specificity   : 96.3%

+ ve PV   : 72%   -ve PV   : 93.2%

Figure (1) : Complete unstained healthy sheet of BGM cell line.

Figure (2): Unstained BGM cell line shows HSV CPE.

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Fig. (3) : Compeletve healthy sheet of GBM cell line stained with crystal violet

Figure (4): BGM cell line stained with crystal violet showing HSV CPE after 3 days

Figure(5): BGM cell line stained with crystal violet showing HSV CPE after 5 days.

Figure (6): Positive cases by DFA showing fluorescing bodies